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Electroporation and Electrophoresis System and Method for Achieving Molecular Penetration into Cells In Vivo

Abstract

The electroporation system and method combine pulses having different characteristics for delivering molecules to cells *in vivo*. The pulses include a high-intensity pulse for inducing electroporation and a low-intensity pulse to induce electrophoretic molecule movement within an interstitial space, molecule adherence to a cell membrane, and electrophoretic movement of the molecule through the permeabilized membrane. The use of a high-intensity and a low-intensity pulse achieves improved delivery; reduction of intensity and/or duration of pulses for inducing electroporation; and decreased muscle stimulation, tissue damage, and patient discomfort.